SEQUENCE LISTING

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HOSS, EVA
FAATZ, ELKE
OFENLOCH-HAHNLE, BEATUS
SEIDEL, CHRISTOPH
WIEDMANN, MICHAEL

<120> DETERMINATION OF A SPECIFIC IMMUNOGLOBULIN USING MULTIPLE ANTIGENS

<130> 100564-07003

<140> 08/776,188
<141> 1997-07-24

<150> PCT/EP95/02919
<151> 1995-07-24

<150> P 44 26 276.0
<151> 1994-07-25

<150> P 44 30 972.4
<151> 1994-08-31

<160> 77

<170> PatentIn Ver. 2.1

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<400> 1
Asn Asn Thr Arg Lys Ser Ile Ser Ile Gly Pro Gly Arg Ala Phe Tyr
1 5 10 15

Thr

<210> 2
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<213> Artificial Sequence

<220>
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<400> 2
Asn Thr Thr Arg Ser Ile Ser Ile Gly Pro Gly Arg Ala Phe Tyr Thr
1 5 10 15

<210> 3
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<220>
<223> Description of Artificial Sequence: Epitope region
of HIV type 1, HIV type 2 or HIV subtype O

<400> 3
Ile Asp Ile Gln Glu Glu Arg Arg Met Arg Ile Gly Pro Gly Met Ala
1 5 10 15

Trp Tyr Ser

<210> 4
<211> 24
<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Epitope region
of HIV type 1, HIV type 2 or HIV subtype O

<400> 4
Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln Leu
1 5 10 15

Leu Gly Ile Trp Gly Ala Ser Gly
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<210> 5
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<223> Description of Artificial Sequence: Epitope region
of HIV type 1, HIV type 2 or HIV subtype O

<400> 5
Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val
1 5 10 15

Pro Trp Asn Ala Ser Trp Ser
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<210> 6
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<212> PRT
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<220>
<223> Description of Artificial Sequence: Epitope region
of HIV type 1, HIV type 2 or HIV subtype O

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Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Ser Ser Gly Lys Leu
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<210> 7
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of HIV type 1, HIV type 2 or HIV subtype O

<400> 7
Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Ser Leu Trp
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<210> 8
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of HIV type 1, HIV type 2 or HIV subtype O

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Leu Ser Leu Trp Gly Cys Lys Gly Lys Leu Val Cys Tyr Thr Ser
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of HIV type 1, HIV type 2 or HIV subtype O

<400> 9
Trp Gly Ile Arg Gln Leu Arg Ala Arg Leu Leu Ala Leu Glu Thr Leu
1 5 10 15

Leu Gln Asn

<210> 10
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of HIV type 1, HIV type 2 or HIV subtype O

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1 5 10 15

Thr Thr Val Pro Trp Pro Asn Asp Ser Leu Thr
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<210> 11
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of Hepatitis C Virus

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Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp
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<210> 12
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Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val
1 5 10 15

<210> 13
<211> 12
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<400> 13
Glu Glu Ala Ser Gln His Leu Pro Tyr Ile Glu Gln
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<210> 14
<211> 9
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<400> 14
Gln Lys Ala Leu Gly Leu Leu Gln Thr
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<210> 15
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<400> 15
Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp
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Ala Ala

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<220>
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of Hepatitis C Virus

<400> 16
Pro Gln Arg Lys Asn Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp Val
1 5 10 15

Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val
20 25

<210> 17
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<220>
<223> Description of Artificial Sequence: Epitope region
of Hepatitis C Virus

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Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala
1 5 10 15

Tyr Met Asn Thr Pro Gly Leu Pro Val
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<210> 18
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<220>
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1 5 10 15

Leu Glu Thr Leu Leu Gln Asn
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<400> 19
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1 5 10 15

Tyr Thr Ser

<210> 20
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<400> 20
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1 5 10 15

Ser Leu Trp

<210> 21
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<400> 21
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1 5 10 15

Trp Tyr Ser

<210> 22
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<220>
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<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

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1 5 10 15

Arg Ala Phe Tyr Thr
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1 5 10 15

Phe Tyr

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Pro Gly Met Ala Trp Tyr Ser
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1 5 10 15

Gly Ile Trp

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1 5 10 15

Leu Gly Ile Trp
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Xaa Xaa Xaa Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp
1 5 10 15

Gln Gln Leu Leu Gly Ile Trp Gly Ala Ser Gly
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<210> 28
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Xaa Xaa Gly Gly Gly Gly Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr
1 5 10 15

Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Ala Ser
20 25

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1 5 10 15

Leu Glu Thr Leu Leu Gln Asn
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<400> 30
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1 5 10 15

Thr Thr Ala Val
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Val

<210> 32
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<400> 32
Xaa Xaa Xaa Xaa Leu Gly Ile Trp Gly Cys Ser Gly Lys Xaa Leu Ile
1 5 10 15

Cys Thr Thr Ala Val
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<210> 33
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<220>
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Trp Asn Ala Ser Trp Ser
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<210> 34
<211> 20
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<400> 34
Gly Cys Ser Gly Lys Xaa Leu Ile Cys Thr Thr Ala Val Pro Trp Asn
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Ala Ser Trp Ser
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<210> 35
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<220>
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<400> 35
Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ala
1 5 10 15

Ser Trp Ser Lys Xaa Gly
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<210> 36
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<220>
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<400> 36
Xaa Xaa Xaa Xaa Leu Ser Leu Trp Gly Cys Lys Gly Lys Leu Val Cys
1 5 10 15

Tyr Thr Ser

<210> 37
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1 5 10 15

Gly Lys Leu

<210> 38
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<220>
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<222> (4)
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1 5 10 15

Ser Leu Trp

<210> 39
<211> 16
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<220>
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<220>
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<222> (2)
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<400> 39
Xaa Xaa Asn Ser Trp Gly Cys Ala Phe Arg Gln Val Cys His Thr Thr
1 5 10 15

<210> 40
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<212> PRT
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<400> 40
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1 5 10 15

Arg Ala Phe Tyr Thr
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<210> 41
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Xaa Xaa Xaa Asn Thr Thr Arg Ser Ile Ser Ile Gly Pro Gly Arg Ala
1 5 10 15

Phe Tyr

<210> 42
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<220>
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<222> (3)
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<400> 42
Xaa Xaa Xaa Asn Thr Thr Arg Ser Ile Ser Ile Gly Pro Gly Arg Ala
1 5 10 15

Phe Tyr

<210> 43
<211> 23
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<220>
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<220>
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<400> 43
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1 5 10 15

Pro Gly Met Ala Trp Tyr Ser
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<210> 44
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<400> 44
Xaa Xaa Xaa Xaa Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu
1 5 10 15

Gly Ile Trp

<210> 45
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<222> (2)
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<400> 45
Xaa Xaa Gly Gly Gly Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
1 5 10 15

Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Ala Ser Gly
20 25

<210> 46
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<400> 46
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Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Ala Ser Gly
20 25

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<220>
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<400> 47
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1 5 10 15

Leu Glu Thr Leu Leu Gln Asn
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<400> 48
Xaa Xaa Xaa Xaa Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys
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Thr Thr Ala Val
20

<210> 49
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Xaa Xaa Gly Gly Gly Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala
1 5 10 15

Val Pro Trp Asn Ala Ser Trp Ser
20

<210> 50
<211> 21
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (21)
<223> BPRu

<400> 50
Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ala
1 5 10 15

Ser Trp Ser Lys Xaa
20

<210> 51
<211> 19

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 51
Xaa Xaa Xaa Xaa Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Ser Ser
1 5 10 15

Gly Lys Leu

<210> 52
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
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<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES

<222> (4)
<223> Beta-alanine

<400> 52
Xaa Xaa Xaa Xaa Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu
1 5 10 15

Ser Leu Trp

<210> 53
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 53
Xaa Xaa Xaa Xaa Asn Ser Trp Gly Cys Ala Phe Arg Gln Val Cys His
1 5 10 15

Thr Thr

<210> 54
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<400> 54
Xaa Gly Gly Gly Gln Ala Gln Leu Asn Ser Trp Gly Cys Ala Phe Arg
1 5 10 15

Gln Val Cys His Thr Thr Val Pro Trp Pro Asn Asp Ser Leu Thr
20 25 30

<210> 55
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 55
Cys Xaa Xaa Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro
1 5 10 15

Glu Ser Asp Ala Ala
20

<210> 56
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 56
Xaa Xaa Xaa Xaa Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala
1 5 10 15

Arg Pro Asp

<210> 57
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<400> 57
Xaa Xaa Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
1 5 10 15

Gly Val

<210> 58
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)..(3)
<223> Beta-alanine

<220>
<221> MOD_RES

<222> (4)
<223> Epsilon-norleucine-OH

<400> 58
Xaa Xaa Xaa Xaa Glu Glu Ala Ser Gln His Leu Pro Tyr Ile Glu Gln
1 5 10 15

<210> 59
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)..(3)
<223> Beta-alanine

<400> 59
Xaa Xaa Xaa Gln Lys Ala Leu Gly Leu Leu Gln Thr
1 5 10

<210> 60
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 60
Xaa Xaa Xaa Xaa Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val
1 5 10 15

Pro Glu Ser Asp Ala Ala
20

<210> 61
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 61
Xaa Xaa Xaa Xaa Lys Asn Lys Arg Asn Thr Asn Arg Arg
1 5 10

<210> 62
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES

<222> (2)
<223> Beta-alanine

<400> 62
Xaa Xaa Pro Gln Arg Lys Asn Arg Asn Thr Asn Arg Arg Pro Gln Asp
1 5 10 15

Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val
20 25

<210> 63
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> Digoxigenin-3-cme

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 63
Xaa Xaa Xaa Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg
1 5 10 15

Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val
20 25

<210> 64
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<400> 64
Xaa Gly Gly Gly Gly Lys Asn Lys Arg Asn Thr Asn Arg Arg
1 5 10

<210> 65
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 65
Xaa Xaa Xaa Xaa Lys Asn Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
1 5 10 15

Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val
20 25

<210> 66
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
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<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
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<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (15)..(16)
<223> Epsilon-norleucine-OH

<400> 66
Xaa Xaa Xaa Xaa Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Xaa Xaa
1 5 10 15

Leu Ala Glu Gln Phe Lys Gln Gln Ala Leu Gly Leu Leu Gln Thr
20 25 30

<210> 67
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 67
Xaa Xaa Xaa Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro
1 5 10 15

Glu Ser Asp Ala Ala
20

<210> 68
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 68
Xaa Xaa Xaa Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg
1 5 10 15

Pro Asp

<210> 69
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 69
Xaa Xaa Xaa Lys Asn Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp Val
1 5 10 15

Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val Leu Leu Pro Arg
20 25 30

Arg

<210> 70
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 70
Xaa Xaa Xaa Asn Pro Lys Pro Gln Lys Lys Asn Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg

<210> 71
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 71
Xaa Xaa Xaa Gly Gln Ile Val Gly Gly Val Tyr Leu Leu Pro Arg Arg
1 5 10 15

Gly Pro Arg Leu Gly
20

<210> 72
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 72
Xaa Xaa Xaa Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val
1 5 10 15

Gly Gly Val

<210> 73
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 73
Xaa Xaa Xaa Xaa Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val
1 5 10 15

Pro Glu Ser Asp Ala Ala
20

<210> 74
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<220>
<221> MOD_RES
<222> (4)
<223> Beta-alanine

<400> 74
Xaa Xaa Xaa Xaa Ser Gln His Leu Pro Tyr Ile Glu Gln
1 5 10

<210> 75
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Epitope region
of HIV type 1, HIV type 2 or HIV subtype O

<400> 75
Pro Gln Lys Lys Asn Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp Val
1 5 10 15

Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val
20 25

<210> 76
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
<221> MOD_RES
<222> (1)
<223> BPRu

<220>
<221> MOD_RES
<222> (2)
<223> Beta-alanine

<220>
<221> MOD_RES
<222> (3)
<223> Epsilon-aminocaproic acid

<400> 76
Xaa Xaa Xaa Asn Pro Lys Pro Gln Arg Lys Asn Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg

<210> 77
<211> 328
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 77
Met Thr Met Ile Thr Pro Ser Leu Ala Ala Gly Pro Asp Lys Gly Asn
1 5 10 15

Ser Ser Gln Val Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly
20 25 30

Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val
35 40 45

Lys Val Ile Glu Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe
50 55 60

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Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu
 65                  70                  75                  80

Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr
                85                  90                  95

Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro His His Ala
            100                 105                 110

Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile
        115                 120                 125

Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn
    130                 135                 140

Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu
145                 150                 155                 160

Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp
                165                 170                 175

Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe
            180                 185                 190

Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp
        195                 200                 205

Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr
    210                 215                 220

Ile Leu Lys Ala Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr
225                 230                 235                 240

Ala Cys Gln Gly Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala
                245                 250                 255

Glu Ala Met Ser Gln Val Thr Asn Ser Ala Thr Ile Met Met Gln Arg
            260                 265                 270

Gly Asn Phe Arg Asn Gln Lys Lys Thr Val Lys Cys Phe Asn Cys Gly
        275                 280                 285

Lys Glu Gly His Ile Ala Lys Asn Cys Arg Ala Pro Arg Lys Lys Gly
    290                 295                 300

Cys Trp Lys Cys Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu
305                 310                 315                 320

Arg Gln Ala Asn Phe Leu Gly Asn
                325
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